

Notice of Allowability

Application No.

10/725,788

Applicant(s)

LI ET AL.

Examiner

Art Unit

Jean B. Corielus

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/8/06.
2. ☒ The allowed claim(s) is/are 1-3, 7-8, 12-15, 19-20, 24-27, 31-32, 36-38, renumbered as 1-20, respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☒ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


Jean B. Corielus
Primary Examiner
Art Unit: 2637

3-17-06

DETAILED ACTION

Claim Objections

1. The claim objection of claims 2-24, 26-36 and 38 has been withdrawn in view of the applicant's comment filed on 2/8/06. In addition, examiner understood "/" as recited in the claims to mean "and".

Claim Rejections - 35 USC § 102

2. The 102 rejection of claims 1-5, 7-10, 12-17, 19-22, 24-29, 31-34 and 36-38 has been withdrawn in view of the amendment filed on 2/8/06.

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Scott Wolinsky on 3/13/06.

IN THE CLAIMS:

Claims 4, 9, 16, 21, 28 and 33 have been canceled.

Claim 3 has been amended as follow:

3. (Currently amended): A receiver comprising:

a plurality of antenna elements for receiving a data signal;

for each antenna element, a plurality of Rake fingers, each Rake finger including a despreader, each Rake finger for processing a received multipath component of the received data signal of its antenna element by applying a complex weight gain to that received multipath component;

a complex weight gain generator for determining the complex weight gain for each Rake finger of each antenna element using an input from all of the Rake fingers, wherein the complex weight gain generator performs a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix being derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger, producing a first matrix, and averaging a multiplication of the output of each despreader with its complex conjugate transpose over each Rake finger, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

a summer for combining an output of each Rake finger to produce an estimate of the data signal.

Claim 8 has been amended as follow:

8. (Currently amended): A receiver comprising:

a plurality of antenna element means for receiving a data signal;

for each antenna element means, a plurality of Rake finger means, each Rake finger means including a means for despreading, each Rake finger for processing a received multipath component of the received data signal of its antenna element means by applying a complex weight gain to that received multipath component;

a complex weight gain generating means for determining the complex weight gain for each Rake finger means of each antenna element means using an input from all of the Rake finger means, wherein the complex weight gain generating means determines the complex weight gains by performing a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix is derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger means, producing a first matrix, and averaging a multiplication of the output of each despreading means with its complex conjugate transpose over each Rake finger means, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

means for combining an output of each Rake finger means to produce an estimate of the data signal.

Claim 15 has been amended as follow:

15. (Currently amended): A wireless transmit/receive unit (WTRU) comprising:

a plurality of antenna elements for receiving a data signal;

for each antenna element, a plurality of Rake fingers, each Rake finger including a despreader, each Rake finger for processing a received multipath component of the received data signal of its antenna element by applying a complex weight gain to that received multipath component;

a complex weight gain generator for determining the complex weight gain for each Rake finger of each antenna element using an input from all of the Rake fingers, wherein the complex weight gain generator performs a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix being derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger, producing a first matrix, and averaging a multiplication of the output of each despreader with its complex conjugate transpose over each Rake finger, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

a summer for combining an output of each Rake finger to produce an estimate of the data signal.

Claim 20 has been amended as follow:

20. (Currently amended): A wireless transmit/receive unit (WTRU) comprising:

a plurality of antenna element means for receiving a data signal;

for each antenna element means, a plurality of Rake finger means, each Rake finger means including a means for despreading, each Rake finger for processing a received multipath component of the received data signal of its antenna element means by applying a complex weight gain to that received multipath component;

a complex weight gain generating means for determining the complex weight gain for each Rake finger means of each antenna element means using an input from all of the Rake finger means, wherein the complex weight gain generating means determines the complex weight gains by performing a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix is derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger means, producing a first matrix, and averaging a multiplication of the output of each despreading means with its complex conjugate transpose over each Rake finger means, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

means for combining an output of each Rake finger means to produce an estimate of the data signal.

Claim 27 has been amended as follow:

27. (Currently amended): A base station comprising:
a plurality of antenna elements for receiving a data signal;

for each antenna element, a plurality of Rake fingers, each Rake finger including a despreader, each Rake finger for processing a received multipath component of the received data signal of its antenna element by applying a complex weight gain to that received multipath component;

a complex weight gain generator for determining the complex weight gain for each Rake finger of each antenna element using an input from all the Rake fingers, wherein the complex weight gain generator performs a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix being derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger, producing a first matrix, and averaging a multiplication of the output of each despreader with its complex conjugate transpose over each Rake finger, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

a summer for combining an output of each Rake finger to produce an estimate of the data signal.

Claim 32 has been amended as follow:

32. (Currently amended): A base station comprising:
a plurality of antenna element means for receiving a data signal;
for each antenna element means, a plurality of Rake finger means, each Rake finger means including a means for despreading, each Rake finger means for

Art Unit: 2637

processing a received multipath component of the received data signal of its antenna element means by applying a complex weight gain to that received multipath component;


a complex weight gain generating means for determining the complex weight gain for each Rake finger means of each antenna element means using an input from all the Rake finger means, wherein the complex weight gain generating means determines the complex weight gains by performing a complex conjugate transpose of an inverse of a noise correlation matrix multiplied by a channel estimate, the noise correlation matrix is derived by averaging a multiplication of the channel estimate with its complex conjugate transpose over each Rake finger means, producing a first matrix, and averaging a multiplication of the output of each despreading means with its complex conjugate transpose over each Rake finger means, producing a second matrix, and subtracting the first matrix from the second matrix, producing the noise correlation matrix; and

means for combining an output of each Rake finger means to produce an estimate of the data signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B. Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jean B Cornelius
Primary Examiner
Art Unit 2637

3-17-06